

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1-22 remain active in this case and Claims 11 and 19 having been amended by the present amendment.

In the outstanding Office Action, Claims 11, 16, and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Alumot (USP 5,699,447) in view of Specht (USP 4,805,123) and Barker (USP 4,587,617); Claim 17 was rejected under 35 U.S.C. §103(a) as being unpatentable over Alumot in view of Specht and Barker and in further view of official notice (MPEP 21144.03); Claims 19, 20, and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Alumot in view of Specht; and Claim 21 was rejected under 35 U.S.C. as being unpatentable over Alumot in view of Specht and in further view of official notice (MPEP 2144.03); Claims 1-10 were allowed; and Claims 12-15 were objected to as being dependent upon a rejected base claim, but were otherwise indicated as including allowable subject matter if rewritten in independent form.

Applicants acknowledge with appreciation the allowance of Claims 1-10 and the indication that Claims 12-15 include allowable subject matter. Since Applicants consider that the amended claims patentably define over the cited prior art, Claims 12-15 have been presently maintained in dependent form.

In light of the outstanding grounds for rejection, Claims 11 and 19 have been amended to clarify the claimed invention so as to more clearly patentably define over the cited references. To that end, Claim 11 has been amended to clarify that the pattern inspection apparatus is configured to execute the inspection procedure shown, for example, in FIG. 7 (see the specification, page 20, line 11, to page 22, line 4). Similarly, Claim 19 has been amended to clarify that the pattern inspection apparatus is configured to execute the

inspection procedure shown, for example, in FIG. 8 (see the specification, page 22, line 5, to page 23, line 4). No new matter has been added.

Turning now to the rejection of Claim 11 as being obvious over Alumot in view of Specht and Baker, this rejection appears to be based on the finding that Alumot discloses the basic structure of the pattern inspection apparatus of Claim 11, but does not explicitly disclose acquisition of two-dimensional images; that Specht discloses acquisition of two-dimensional images; and that Baker teaches measurement of the sizes of defect candidate areas; and that the combined teachings of the three references renders obvious the subject matter defined in Claim 11.

To better distinguish over the prior art, Claim 1 has been amended to state,

... after the first imaging optics forms the first optical image and the detected pattern generator detects the first optical image to generate the detected pattern data, the repeated pattern area generator generates the image data of the entire image region of the pattern from the design pattern data with the lower pixel size to detect if the candidates for the repeated pattern areas exist, and the comparator compares the detected pattern areas on the detected pattern data with the die-to-die comparison.

Thus, in the pattern inspection apparatus of amended Claim 11, after the first imaging optics forms the first optical image and the detected pattern generator detects the first optical image to generate the detected pattern data, the repeated pattern area generator generates the image data of the entire image region of the pattern from the design pattern data with the lower pixel size to detect if the candidates for the repeated pattern areas exist.

In die-to-die inspection or die-to-database inspection disclosed in Alumot, known pattern areas are compared, or a certain pattern area is compared with a corresponding pattern area obtained from a database. This differs from the pattern inspection apparatus of amended Claim 11 in which unknown repeated pattern areas are detected. Stated differently, Alumot

merely discloses a method of optically detecting a defect (see, for example, col. 2, lines 4 to 20), but does not disclose or suggest detection of repeated pattern areas.

Specht merely provides a method of automatically detecting a photomask defect by normal die-to-die inspection or die-to-database inspection, and does not even suggest detection of repeated pattern areas.

Baker merely teaches "measurement of the size of the defect by counting the number of consecutive digital signals produced by the comparator," which differs from measurement of the size of repeated pattern areas. The pattern inspection apparatus recited in amended Claim 11 belongs to a technical field different from that of normal techniques of measuring a defect size, and, in Applicants' view, cannot easily be derived from the latter techniques.

Claim 19 is rejected as being obvious over Alumot in view of Specht based on the finding that Alumot discloses the basic structure of the pattern inspection apparatus of Claim 19, but does not explicitly disclose acquisition of two-dimensional images; and that Specht discloses acquisition of two-dimensional images.

To better rebut such analysis, Claim 19 has been amended to recite further:

... while the imaging optics forms the optical image and the detected pattern generator detects the optical image to generate the detected pattern data, the repeated pattern area detector analyzes the layout information of the design pattern data as to whether the patterns from the same file exist, detects and registers the repeated pattern areas from the design pattern data, and the comparator compares the detected pattern data corresponding to the detected pattern areas registered with the die-to-die comparison.

Thus, in the pattern inspection apparatus of Claim 19, design pattern data is analyzed to detect same-data-repeated areas in a "same," i.e., single file (see, for example, FIG. 8). The outstanding Office Action states that this limitation can be inferred from Alumot, col. 2, lines 46 to 49, and col. 27, lines 7 to 37. However, the cited portions of Alumot merely describe the content of a die-to-database inspection method, and do not disclose or suggest detection of repeated pattern areas.

In light of the above, it is respectfully submitted that pending amended Claims 11 and 19 are not rendered obvious based on teachings of the cited references, individually or in combination. Accordingly, the outstanding grounds for rejection are believed to have been overcome by the present clarifying amendment to Claims 11 and 19, and Claims 11 and 19, as well as dependent Claims 16-18 and 20-22, are also believed to be allowable.

Consequently, in view of the present amendment and in light of the above comments, no further issues are believed to be outstanding, and the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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